CHAPTER 8. VHF/UHF DF PROCEDURES

800. GENERAL. These criteria apply to Direction Finding procedures for both high and low altitude aircraft. DF criteria shall be the same as criteria provided for ADF procedures, except as specified herein. As used in this Chapter, the word "facility" means the DF antenna site. DF approach procedures are established for use in emergency situations. However, where required by a using agency, DF may be used for normal instrument approach procedures.

801.-809. RESERVED.

Section 1. VHF/UHF DF Criteria

810. ENROUTE OPERATIONS. Enroute aircraft under DF control follow a course to the DF station as determined by the DF controller. A minimum safe altitude shall be established which provides at least 1000 feet (2000 feet in mountainous areas) of clearance over all obstacles within the operational radius of the DF facility. When this altitude proves unduly restrictive, sector altitudes may be established to provide relief from obstacles which are clear of the area where flight is conducted. Where sector altitudes are established, they shall be limited to sectors of not less than 45 degrees in areas BEYOND a 10 mile radius around the facility. For areas WITHIN 10 miles of the facility, sectors of NOT LESS THAN 90 degrees shall be used. Because the flight course may coincide with the sector division line, the sector altitude shall provide at least 1000 feet (2000 feet in mountainous terrain) of clearance over obstacles in the adjacent sectors within 6 miles or 20 degrees of the sector division line, whichever is the greater. No sector altitude shall be specified which is lower than the procedure or penetration turn altitude or lower than the altitude for area sectors which are closer to the navigation facility.

811. INITIAL APPROACH SEGMENT. The initial approach fix is overhead the facility.

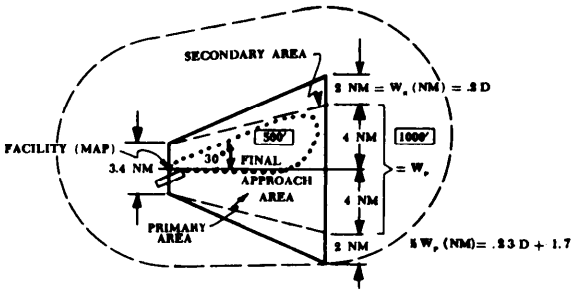

Figure 72. LOW ALTITUDE DF APPROACH AREA. Par 811.

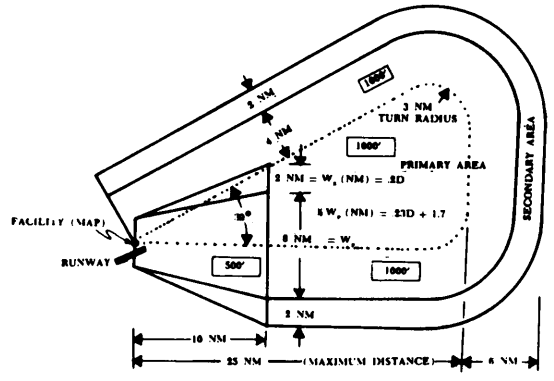

Figure 73. HIGH ALTITUDE DF APPROACH AREA. Par 811.

a. Low Altitude Procedures. The initial approach may be either a 10 mile teardrop procedure turn or the triangular procedure illustrated in Figure 72. In either case, the 10 mile procedure turn criteria contained in Paragraph 234.a., b., c., and d. apply.

b. High Altitude Procedures. The initial approach may be either the standard teardrop penetration turn or the triangular procedure illustrated in Figure 73. When the teardrop penetration turn is used, the criteria contained in Paragraph 235.a., b., c., and d. apply. When the triangular procedure is used, the same criteria apply except that the limiting angular divergence between the outbound course and the reciprocal of the inbound course may be as much as 45 degrees.

812. INTERMEDIATE APPROACH SEGMENT. Except as outlined in this paragraph criteria for the intermediate segment are contained in Chapter 2, Section 4. An intermediate segment is used only when the DF facility is located off the airport, and the final approach is made from overhead the facility to the airport. The width of the primary intermediate area is 3.4 miles at the facility, expanding uniformly on each side of the course to 8 miles wide 10 miles from the facility. A secondary area is on each side of the primary area. It is zero miles wide at the facility, expanding along the primary area to 2 miles each side at 10 miles from the facility. See Figure 74.

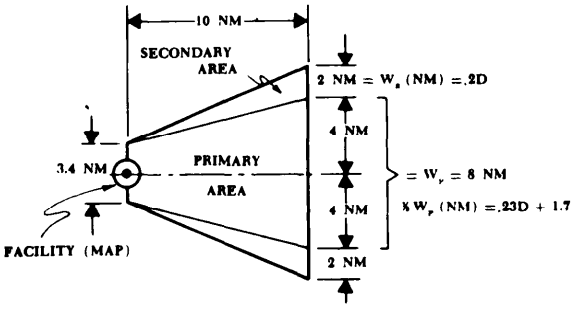

Figure 74. DF INTERMEDIATE APPROACH AREA. Par 812.

813. FINAL APPROACH SEGMENT. The final approach begins at the facility for off-airport facilities or where the procedure turn intersects the final approach course for on-airport facilities (see Paragraph 400 for the definition of on-airport facilities). DF procedures shall not be developed for airports which are more than 10 miles from the DF facility. When a facility is located in excess of 6 miles from an airport, the instrument approach shall end at the facility and flight to the airport shall be conducted in accordance with visual flight rules (VFR).

a. Alignment.

(1) On-Airport Facilities. Paragraph 613.a.(1) and (2) apply.

(2) Off-Airport Facilities. Paragraph 713.a.(1)(a) and (b) apply.

b. Area.

(1) Low Altitude Procedures. Figure 74 illustrates the final approach primary and secondary areas. The primary area is longitudinally centered on the final approach course and is 10 miles long. The primary area is 3.4 miles wide at the facility and expands uniformly to 8 miles wide at 10 miles from the facility. A secondary area is on each side of the primary area. It is zero miles wide at the facility and expands uniformly to 2 miles on each side of the primary area at 10 miles from the facility.

(2) High Altitude Procedures. The area considered is identical to that described in Paragraph 623.b. and Figure 60 except that the primary area is 3.4 miles wide at the facility.

c. Obstacle Clearance.

(1) Straight-In. The minimum obstacle clearance in the primary area is 500 feet. In the secondary areas, 500 feet of obstacle clearance shall be provided at the inner edge, tapering to zero feet at the outer edge. The minimum required obstacle clearance at any given point in the secondary area is shown in Appendix 2, Figure 123.

(2) Circling Approach. In addition to the minimum requirements specified in Paragraph 813.c.(1), obstacle clearance in the circling area shall be as prescribed in Chapter 2, Section 6.

d. Procedure Turn Altitude. The procedure turn completion altitude (minimum base leg altitude in triangular procedures) shall be within 1500 feet of the MDA on final approach.

e. Penetration Turn Altitude (Descent Gradient). The penetration turn altitude (minimum base leg altitude in triangular procedures) shall be at least 1000 feet but not more than 4000 feet above the MDA on final approach.

f. Minimum Descent Altitude (MDA). The criteria for determining MDA are contained in Chapter 3, Section 2, except that in high altitude procedures, the MDA specified shall provide at least 1000 feet of clearance over obstacles in that portion of the initial approach segment between the final approach segment and the point where the assumed

penetration course intercepts the inbound course. See Figure 60.

814. MISSED APPROACH SEGMENT. Criteria for the missed approach segment are contained in Chapter 2, Section 7. For on-airport facility locations, the missed approach point is the facility. For off-airport facility locations, the missed approach point is a point on the final approach course which is NOT farther from the facility than the first usable landing surface. The missed approach surface shall commence over the missed approach point at the required height. See Paragraph 274.

815. - 819. RESERVED.

Section 2. Communications

820. TRANSMISSION INTERVAL. DF navigation is based on voice transmission of heading and altitude instructions by a ground station to the aircraft. The MAXIMUM interval between transmissions is:

a. Enroute Operations. 60 Seconds.

b. From the Initial Approach Fix to Within an Estimated 30 Seconds of the Final Station Passage or Missed Approach Point. 15 Seconds.

c. Within 30 Seconds of the Final Station Passage or Missed Approach Point. 5 Seconds. (15 Seconds for Doppler DF Equip.).

821. - 829. RESERVED.

Section 3. Minimums

830. APPROACH MINIMUMS. The minimums established for a particular airport shall be as prescribed by the appropriate approving agency, but the MDA shall NOT be lower than that required for obstacle clearance on final approach and in the circling area specified in Chapter 2, Section 6.

831. - 899. RESERVED.